IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Patent Application of		Conf. No.:	1391
SHIMADA et al		Atty. Ref.:	829-620
Serial No. 10/771,263		TC/A.U.:	2871
Filed: February 4, 2004		Examiner:	Chien, Lucy P.

For: TRANSMISSION TYPE LIQUID CRYSTAL DISPLAY HAVING A TRANSPARENT COLORLESS ORGANIC INTERLAYER INSULATING FILM BETWEEN PIXEL ELECTRODES AND SWITCHING

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February 4, 2010

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REQUEST FOR RECONSIDERATION

Sir:

Please consider the ensuing remarks together with an IDS filed on even date herewith as a submission for a request for continued examination (RCE) under 37 CFR §1.114 for the captioned application.

REMARKS: STATUS OF CLAIMS

Claims 1-24 and 34-60 are pending and have been rejected. Claims 1-5, 12-17, 21, 23, 24, 34, 35, 37-39, 43, 44, 46-48, 52, 53 and 55-57 stand rejected under 35 USC §103(a) as being unpatentable over U.S. Patent 5,585,951 to Noda et al in view of U.S. Patent 4,460,667 to Landa.

Claims 6-11, 18-20 and 22 stand rejected under 35 USC §103(a) as being unpatentable over U.S. Patent 5,585,951 to Noda et al and U.S. Patent 4,460,667 to Landa in view of U.S. Patent 5,128,788 to Takatoh et al.

Claims 40, 41, 49, 50, 58 and 59 stand rejected under 35 USC §103(a) as being unpatentable over U.S. Patent 5,585,951 to Noda et al and U.S. Patent 4,460,667 to Landa in view of U.S. Patent 5,051,800 to Shoji et al.

Claims 36, 45, 54, and 60 stand rejected under 35 USC §103(a) as being unpatentable over U.S. Patent 5,585,951 to Noda et al and U.S. Patent 4,460,667 to Landa in view of U.S. Patent 5,359,441 to Mori et al.

Claims 42 and 51 stand rejected under 35 USC §103(a) as being unpatentable over U.S. Patent 5,585,951 to Noda et al and U.S. Patent 4,460,667 to Landa in view of U.S. Patent 5,229,644 to Wakai et al.

Claims 25-33 have been cancelled. No claims have been substantively allowed.

REMARKS: ARGUMENT

1. Claims 34, 35, 37 – 39, 43, 44, 46 – 48, 52, 55 – 57 are patentable over U.S. Patent 5,585,951 to Noda et al in view of U.S. Patent 4,460,667 to Landa.

The Final Office Action properly concedes that Noda does not disclose, e.g., that its planarization film (e.g., Noda film 1784) has a dielectric constant of 3.4 to 3.8[1]. *See,* the first full paragraph on page 4 of the Final Office Action. Yet the Final Office Action incorrectly contends that U.S. Patent 4,460,667 to Landa allegedly proves the "scientific fact" that "the acrylic resin used to make the insulator in Noda et al has a dielectric constant property of 3.0 – 3.5". *See,* the second full paragraph *et seq* on page 4 of the Final Office Action.

The precise wording of Landa is that "The dielectric constant of an acrylic resin, such as methyl methacrylate, lies between 3.0 and 3.5" (underlined emphasis added). Significantly, by this quote Landa does not teach that *all* acrylic resins have a dielectric constant between 3.0 and 3.5. Landa's disclosure fails to confirm that Noda's acrylic resin necessarily has a dielectric constant between 3.0 and 3.5.

Landa fails to demonstrate that the transparent interlayer organic insulating film of Noda *inherently* has a dielectric constant property of 3.0 – 3.5. Contrary to the Examiner's reliance on Landa, Applicants have provided evidence that acrylic resins may possess a range of dielectric constants outside of the claimed 3.0 – 3.5 range. The fact that acrylic resins may have a range of dielectric constants outside of the claimed 3.0 – 3.5 range demonstrates that Noda fails to establish a *prima facie* case of obviousness.

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[1] The office action also concedes that Noda et al does not disclose a spectral transmittance of the transparent interlayer organic insulating film has a lower transmittance for blue light than that for green and red light. See, e.g., June 9, 2009 office action, page 4, first full paragraph.

The Federal Circuit has explained in *In re Rijckaert*, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993), for example, the following with regard to inherency and obviousness:

> The mere fact that a certain thing may result from a given set of circumstances is not sufficient [to establish inherency.]" In re Oelrich, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981) (citations omitted) (emphasis added). "That which may be inherent is not necessarily known. Obviousness cannot be predicated on what is unknown." In re Spormann, 363 F.2d 444, 448, 150 USPQ 449, 452 (CCPA 1966). Such a retrospective view of inherency is not a substitute for some teaching or suggestion supporting an obviousness rejection. See In re Newell, 891 F.2d 899, 901, 13 USPQ2d 1248, 1250 (Fed.Cir. 1989).

The fact that Noda may teach an acrylic resin with the required dielectric constant is not sufficient to establish a prima facie case of obviousness as the Examiner has failed to establish that all acrylic resins of Noda necessarily meet the requirements of the claims. To the contrary, Applicants have previously submitted evidence that Noda's acrylic resin may not necessarily have a dielectric constant between 3.0 and 3.5. Specifically, Applicants have cited US Patent 5,076,963 to Kameyama et al which describes certain acrylic resins as having a dielectric constant of values of 10 or greater[2]. Note particularly col. 4, lines 18 of US Patent 5,076,963 to Kameyama which lists numerous acrylic compounds and which further states that such compounds have "a high dielectric constant of not less than 10". *See*, also, col. 7, lines 3 - 5, col. 8, Example 1, and col. 10, example 8. Kameyama Example 1 describes an insulator layer of acrylate with a dielectric constant of 30. Unlike Landa (whose entirely different field of endeavor is described below), the acrylic resins exemplified by US Patent 5,076,963 to Kameyama are used in insulator layers for visible display devices.

Thus, it is not inevitable that Noda's planarization film 1784 is in any particular dielectric constant range as is required by the claims, and the rejection under 35 USC §103(a) must fail under *In re Rijckaert*, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

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[2] See, the Request For Reconsideration filed April 17, 2009, paragraph bridging pages 2 and 3.

Noda's teaching regarding planarization layers (11 and 1784) using acrylic resin is quite brief. For example, Noda only states that the planarization layers 11, 1784 are suitably selected from the specified organic materials and inorganic materials. As to the organic materials, for example, an acrylic resin or a polyimide resin may be used. Noda's disclosure does not appear to include any significant discussion or concern regarding the dielectric constant associated with the material. Accordingly, it is unreasonable to equate the planarization layers 11, 1784 of Noda – which are only possibly made of acrylic resin – with the claimed insulating layer having a specific dielectric range. Moreover, as shown above, the entire record including Landa fails to establish a basis for concluding that it is inevitable that the Noda insulating layer inherently have the claimed dielectric range.

Nor is there basis or motivation to modify Noda to include Landa's supposed dielectric constant. The final office action of June 9, 2009 alleges (at the bottom of page 4) that motivation arises from the desire to produce a reliable photosensitive insulating film on top of the TFT to embed the irregularities on the surface of the device bus lines. But embedding of irregularities and reliability can be accomplished in ways not germane to dielectric constant. Moreover, as indicated above, Noda's disclosure does not appear to include any significant discussion or concern regarding the dielectric constant associated with the material.

Significantly, Landa's field of endeavor is remote from and unrelated to that of Noda. Landa discloses a "method for developing latent electrostatic images for gap transfer to a carrier sheet" (*see*, e.g., the Landa title). Landa's field of endeavor is confined to developing electrostatic images, e.g., formation of images using toner particles as occurs in photocopying technology. The differences and disparities between photocopying and liquid crystal display are legion. For example, Landa's image is formed on a carrier sheet, not a semiconductor-based display element. Landa's image, once formed, remains fixed, whereas images provided on a LCD are changeable. Landa's charged toner particles have entirely different composition and behavior as compared to liquid crystals.

Moreover, Landa's acrylic resin (col. 3, lines 47 – 50) is used for spacer particles in a carrier liquid (col. 3, lines 24 *et seq*) and serves to act as "gap-forming means to prevent the freshly developed image from contacting the carrier sheet…" (col. 3, lines 37 *et seq*). Teachings of acrylic resin spacer particles dispersed in a liquid carrier would not be considered by the person skilled in the liquid crystal display art when contemplating formation of a solid insulating planarization layer.

One example of acrylic resin cited by Landa is methyl methacrylate (col. 3, lines 48 – 50). Landa is silent as to whether or not methyl methacrylate is photosensitive, and certainly does not require that its spacer particles be photosensitive (since [instead of photosensitivity] electromagnetic phenomena are involved in Landa's toner development).

The photocopy art of Landa is thus vastly different from Noda's field of liquid crystal display technology. The person skilled in the art would not turn to Landa's photocopying disclosure for a teaching to use in or combine with Noda.

Appellants therefore submit that the record does not provide a basis to conclude that it is an established scientific fact that the acrylic resin used in Noda necessarily has a dielectric constant property of 3.0 – 3.5. In contradiction to the overstated position of the Final Office Action, Appellants' again call attention to US Patent 5,076,963 to Kameyama[3] which describes certain acrylic resins as having dielectric constant values of 10 or greater. See, e.g., col. 7, lines 3 - 5, col. 8, Example 1, and col. 10, example 8. Kameyama Example 1 describes an insulator layer of acrylate with a dielectric constant of 30. Unlike Landa, the acrylic resins exemplified by US Patent 5,076,963 to Kameyama are used in insulator layers for visible display devices.

Thus, it cannot be inferred from Landa that Noda's planarization film (e.g., film 1784) is in any particular dielectric constant range, and accordingly the prior art rejection must be reversed.

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[3] US Patent 5,076,963 was mentioned in the Request for Reconsideration filed on April 17, 2009.

2. Claims 1 – 5, 12 – 17, 21, 23, and 24 are patentable over U.S. Patent 5,585,951 to Noda et al in view of U.S. Patent 4,460,667 to Landa.

Independent claims 1 and 14 both concern a transmissive liquid crystal display device having a transparent colorless interlayer organic insulating film, wherein a spectral transmittance of the transparent colorless interlayer organic insulating film/layer has a lower transmittance for blue light than that for green and red light.

The Final Office Action properly concedes that Noda does not disclose a spectral transmittance of a transparent interlayer organic insulating film (alleged to be the Noda insulating film 1784) as having a lower transmittance for blue light than that for green and red light. See, the first full paragraph on page 4 of the Final Office Action.

The Final Office Action seems to think that Appellants' own specification provides some basis for conjecturing that that the Noda teaches a transparent interlayer organic insulating film having a spectral transmittance lower for blue light than for green and red light. In so opining, the Final Office Action fallaciously assumes that "the acrylic resin taught by Noda…[has] a dielectric constant of 3.0 – 3.5. In Arguments already presented (see Arguments beginning on page), Appellants have above already explained that the record does not provide a basis to conclude that the acrylic resin used in Noda necessarily has a dielectric constant property of 3.0 – 3.5. For this reason alone the rejections of claims 1 – 5, 12 – 17, 21, 23, and 24 and claims dependent thereon must fail.

Moreover, Appellants fail to see how any statement in their own specification would serve as a basis to impart limitations such as those found in the last paragraphs of independent claims 1 and 14 to the Noda planarization film.

In the above regard, the Final Office Action makes specific reference to paragraph [0090] of Applicants' published specification[4]. Applicants' specification paragraph [0090] is reproduced below for convenience:

> The acrylic resin constituting the interlayer insulating film 38 has a dielectric constant of 3.4 to 3.8 which is lower than that of an inorganic film (e.g., the dielectric constant of silicon nitride is 8) and a high transparency. Also, since the spin coating is employed, a thickness as large as 3 μm can be easily obtained. This reduces the capacitances between the gate line 22 and the pixel electrode 21 and between the source lines 23 and the pixel electrodes 21, lowering the time constant. As a result, the influence of the capacitances between the lines 22 and 23 and the pixel electrode 21 appearing on the display, such as crosstalk, can be reduced, and thus a good and bright display can be obtained.

Appellants wonder if instead the Final Office Action intended to cite paragraph [0094], quoted below:

> Since the thickness of the interlayer insulating film 38 is as large as several micrometers, thicker than that in conventional liquid crystal display, a resin with a transmittance as high as possible is preferably used. The visual sensitivity of a human eye for blue is a little lower than those for green and red. Accordingly, even if the spectral transmittance of the film has slightly lower transmittance for blue light than that for green and red light, the display quality will be not substantially deteriorated. Though the thickness of the interlayer insulating film 38 was made 3 μm in this example, it is not limited to 3 μm. The thickness of the interlayer insulating film may be set depending on the transmittance and the dielectric constant of the film. In order to reduce the capacitance, the thickness is preferably equal to or grater than about 1.5 μm, more preferably equal to or grater than about 2.0 μm.

Appellants' statement that "The thickness of the interlayer insulating film may be set depending on the transmittance *and* the dielectric constant of the film" (emphasis added) does not specify that a film having a dielectric constant of 3.0 – 3.5 would necessarily have a lower transmittance for blue light than for green and red light. The

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[4] The reference to Applicants' published specification (in the third full paragraph on page 4 of the Final Office Action) should instead be to US 20010002857.

sentence instead states that thickness is made dependent upon both transmittance and the dielectric constant.

Appellants fail to see how either paragraph quoted above or any other statement in their own specification would serves as a basis to impart limitations such as those found in the last paragraph limitations of independent claims 1 and 14 to the planarization film of Noda. The record is devoid of any proof that a film having a dielectric constant of 3.0 – 3.5 would necessarily have a lower transmittance for blue light than for green and red light.

Moreover, Appellants reassert September 19, 2001 comments (incorporated herein by reference) submitted during prosecution of their US Patent 6,433,851. For example, Appellants remind the Office that they have transformed a problem, i.e., poor blue transmittance, into an advantage. Appellants discovered that an interlayer insulating film having a relatively-poor blue transmittance is advantageous with respect to shorter production times. Appellants also discovered that poor blue transmittance is not visually perceptible. Appellants recognized that an interlayer insulating film with high transmittance for red and green light, and a lesser transmittance for blue light, would still yield a good display having an interlayer insulation film that appears to be transparent to the human eye. Neither Noda nor any other applied reference have made or capitalized upon such recognition.

CONCLUSION

In view of the foregoing, it is respectfully requested that all prior art rejections be withdrawn and the application be passed to issue.

The Commissioner is authorized to charge the undersigned's deposit account #14-1140 in whatever amount is necessary for entry of these papers and the continued pendency of the captioned application.

Should the Examiner feel that an interview with the undersigned would facilitate allowance of this application, the Examiner is encouraged to contact the undersigned.

Respectfully submitted,

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